

Third West Weekly Report Shepherd, Michael



to:

Joyce Ackerman, 'Craig Bamitz (cbamitz@utah.gov)' 04/25/2012 03:50 PM

Hide Details

From: "Shepherd, Michael" < Michael. Shepherd@rockymountainpower.net>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Bamitz (cbamitz@utah.gov)" <cbarnitz@utah.gov>

8 Attachments











Weekly Report 04-09 to 04-15-12.pdf Third West Weekly Log 2011-16.pdf 233895-1.pdf 233984-1.pdf 234064-1.pdf







234160-1.pdf 234312-1.pdf 234314-Lpdf

Joyce & Craig,

Attached are the reports for the week of April 16, 2012.

Ail air monitoring results came back negative, except one hit on Tuesday, April 17, 2012.

Please let me know if you have any questions.

Thanks,

Mike Shepherd Project Manager Rocky Mountain Power - Major Projects 801.220.4584 Office 801.631.1310 Cell 801.220.2797 Fax michael.shepherd@paclficorp.com

PROJECT NAME:	Third West	Sub - Rebuild	DATE :S	unday, A pril 15, :	, 2012			
PO & Work Order NO. :	300007805	60 / 10035803	MAIN CONTRACTO	R : Cache Valle	y Electric			
Crew Start Time:	6:50	Crew Stop Time:	16:45	Tot Hrs mns:	9:55			
FCR Start Time:	6:41	FCR Stop Time:	16:45	Tot Hrs mns:	10:04			
Use military time format 00:00				-				
WEATHER CONDITIONS:		Partly Cloudy/Cloudy -	40 degrees in AM, 55 de	grees in PM				
DESCRIPTION: (work perform	ned, general co	mments, instructions to	contractor, # of crew r	nembe r s onsite	.)			
CVE Electrical Crew piped in equipicable trench and started assembling Electrical Crew = 3, R&R = 1, Wild	g the ground mats							
IF WORKING IN ENERGIZED S Dispatcher login, name and time:	SUBSTATION: Eari McGlore	0641			_:			
Dispatcher logout, name and time:	Eari McGlore	1645						
DISCREPANCIES:	· · · · · · · · · · · · · · · · · · ·		IMMEDIATE CORRECT	IVE ACTION TA	AKEN:			
3/23 - Still waiting for the second CT ter	minal block from Hy	vundai	Confirmed with Ken Foster on 3/22 that RMP has not received this yet.					
4/9 - Identifed an issue with mounting o	f the ground blades	on 150A and 151A	Sent S/N to Pascor.					
11/30 - Identified an additional retaining Demo Plan.	wall that is below g	rade and does not show on the	Will excavate to detennine di	mensions.	<u> </u>			
12/15 - Excavated to locate the 46 kV c	depth will be much o		Sent e-mail to Roger F.					
DELAYS OR LOST TIME ENCO								
CVE fab crew: Portable toilet (3), forklii JLG (2), tool trailer. Newman: trachoe	ft, 1 dumpster, office			ick. CVE Line Crew	Pickup (2),			
OSHA Recordable Safety Incid	dents:		Reporte	ed by:	Time:			
Rocky Mountain	Douge		Plies Johnson	·				

Rocky Mountain Power

Russ Johnson
Field Construction Representative

PROJECT NAME:		Third West	Sub - Rebuild	DATE :	Mon	day, Ap ril 16, 2	2012			
PO & Work Order NO. :_		3000078050	0 / 10035803	MAIN CONT	RACTOR :	Cache Valle	y Electric			
Crew Start Time:	6:	:45	Crew Stop Time:	18:15	5	Tot Hrs mns:	11:30			
FCR Start Time:	6	:34	FCR Stop Time:	. 18:15		Tot Hrs mns:	11:41			
Use military time format 00			i Old Otop Time!	1 10.10	,	1001110111110.	11.41			
			•							
WEATHER CONDITIONS	S:		Partly Cloudy - 45 d	legrees in AM, 6	55 degrees	in PM				
DESCRIPTION: (work p										
on the 138 kV duct bank in the elbows for the 138 kV duct be and tied conduits into the exiplaced conduits for same. Not when they start pulling with CVE Electrical Crew = 3, Note that the same is the conduits of the conduits for same in the cond	ank. CVE isting 138 l lewman als ire on Thur	Line Crew worl kV conduits con so spread ABC sday, April 19.	ked on ground mats. Newm ning from Gadsby and Jorda material in the 138 kV yard. RMP relay personnel are or	an excavated for an. They excavate I met with Soutw	the 138 kV or ed north fron ire and W as	duct bank in the n vaults #9 and atch to discuss	46 kV yard #10, and their needs			
IF WORKING IN ENERG	IZED SUI	RSTATION:								
Dispatcher login, name and		Barry Nielson C	0634			_				
Dispatcher logout, name and		Al Swinski 181	·							
DISCREPANCIES:			-	IMMEDIATE CO	ORRECTIV	E ACTION TA	KEN:			
3/23 - Still waiting for the second	d CT termin	al block from Hyu	Indai	Confirmed with Ken Foster on 3/22 that RMP has not received						
4/9 - Identifed an issue with mot	unting of the	e ground blades o	on 150A and 151A	this yet. Sent S/N to Pascor	ī.					
11/30 - Identified an additional r	etaining wa	Il that is below or:	ade and does not show on the	Will excavate to de	tennine dime	nsions	- -			
Demo Plan.	-	-								
12/15 - Excavated to locate the didn't find them. Will try again.	46 kV cable Actual dept	es exiting the Wes th will be much de	t side of the yard. Dug 8' and	Sent e-mail to Rog	er F.					
DELAYS OR LOST TIME										
EQUIPMENT (working, of CVE fab crew: Portable toilet (3 JLG (2), tool trailer. Newman:	3), forklift, 1	dumpster, office			er, crew truck.	CVE Line Crew:	Pickup (2),			
OSHA Recordable Safet	y Incider	nts:			Reported	by:	Time:			
L										
		_								

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PROJECT NAME:	Third West Su	b - Rebuild	DATE :T	uesday, April 17,	17, 2012				
PO & Work Order NO. :	3000078050 /	10035803	MAIN CONTRACTO	R: Cache Vall	ey Elect ric				
Crew Start Time:	6:50	Crew Stop Time:	17:20	Tot Hrs mns:	10:30				
FCR Start Time:	6:46	FCR Stop Time:	17:45	Tot Hrs mns:	10:59				
Use military time format 00:00		, on Grop , mor			10.00				
WEATHER CONDITIONS:	<u>_</u>	Rainy and 50 degrees in	n AM, Sunny and 67 de	grees in PM.					
DESCRIPTION: (work perform	ned, gene r al comm	nents, instructions to	contractor, # of crew	members onsite	∍.)				
R&R set up four monitors. CVE Falassisted the electricians in pulling of lights, mobing cable to the site, and home due to weather, around 9:00. RMP relay and communications plattery system. CVE Line Crew = Wilding = 1.	of control cable. CVE pulling control cable AM. Newman excavorersonnel are on site.	Electrical Crew worked or to the circuit breakers in tated along the south fenc Capital Electric electricia	n conduits to equipment in he yard. CVE Line Crew e for the 12 kV duct bank ns are on site today comp	the yard, assemb stuck it out for a wl and installed cond leting the commun	ling yard nile and went uits in same. ication				
IF WORKING IN ENERGIZED S	SUBSTATION:	. <u>-</u> -	· · · · · · · · · · · · · · · · · · ·	 					
Dispatcher login, name and time:	Bany Nielson 063	34							
Dispatcher logout, name and time:	Gus Montanez 17								
DISCREPANCIES:	IGUS MONTANEZ 17		IMMEDIATE CORREC	TIVE ACTION T	AKEN:				
3/23 - Still waiting for the second CT ter	minal block from Hvund		Confirmed with Ken Foster of						
			this vet.						
4/9 - identifed an issue with mounting o	if the ground blades on 1	150A and 151A	Sent S/N to Pascor.		• ·.				
					-				
11/30 - identified an additional retaining	wall that is below grade	and does not show on the	Will excavate to determine d	imensions.					
Demo Plan. 12/15 - Excavated to locate the 46 kV c	ables exiting the west si	ide of the yard. Dug 8' and	Sent e-mail to Roger F.						
didn't find them. Will try again. Actual of DELAYS OR LOST TIME ENCO		per than design of new		<u> </u>					
EQUIPMENT (working, deliver	red. idl e):	 							
CVE fab crew: Portable toilet (3), forklii JLG (2), tool trailer. Newman: trachoe	ft, 1 dumpster, office trai			uck. CVE Line Crew	r: Pickup (2),				
OSHA Recordable Safety Incid	dents:		Report	ted by:	Time:				
Rocky Mountain	Power		Russ Johnson Field Construction Re	eprese ntativ e					

PACIFICORP OPERATIONS - Field Construction Representative Daily Log PROJECT NAME: Third West Sub - Rebuild DATE: Wednesday, April 18, 2012 PO & Work Order NO.: 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric Crew Start Time: Crew Stop Time: 19:00 Tot Hrs mns: FCR Start Time: 6:37 FCR Stop Time: 19:03 Tot Hrs mns: 12:26 Use military time format 00:00 **WEATHER CONDITIONS:** Cloudy and 53 degrees in AM, 65 degrees in PM DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. CVE Fab Crew reinforced the duct banks running north and west from vaults #9 and #10 and placed FTB around and over the conduits. They added the final piece of cable trench to the south cable trench mn and modified some mitered pieces of cable trench to fit the new design for a truck crossing to run from the cable trench into the switchgear pullbox. CVE Electrical Crew pulled wire to equipment in the 138 kV yard . CVE Line Crew installed grounding in the oil containment pit, drove ground rods and dug grounding trenches. Newman prepped north road in the EZ for traffic, on Thursday and Friday, hauling dirt to Clean Harbors. They also placed ABC material to allow for FTB placement on conduits running west from vaults #9 and #10. Newman graded the roadway into the N S tmck crossing and compacted around cable trenches and foundations with the small compactor. RMP relay and communications personnel are on site. KT Services was on site to prep for pulling innerduct and fiber into the substation tonight. Acore Concrete Cutting was on site to modify the pull box and truck crossing trenches. KT Services and RMP Underground worked the night shift to pull innerduct and fiber into the control building. CVE Line Crew = 4, CVE Fab Crew = 4, CVE Electrical Crew = 3, Newman = 4, Emerson = 1, KT Services + 4, Acore = 1, R&R = 1, Wilding = 1. IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Jim Bowman 0637 Dispatcher logout, name and time: Gus Montanez 1903 IMMEDIATE CORRECTIVE ACTION TAKEN: **DISCREPANCIES:** 3/23 - Still waiting for the second CT terminal block from Hyundai Confirmed with Ken Foster on 3/22 that RMP has not received this yet. 4/9 - identifed an issue with mounting of the ground blades on 150A and 151A Sent S/N to Pascor. 11/30 - identified an additional retaining wall that is below grade and does not show on the Will excavate to determine dimensions. 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F. didn't find them. Will try again. Actual deoth will be much deeper than design of new **DELAYS OR LOST TIME ENCOUNTERED:**

EQUIPN	1ENT	(working.	delivered	. idle):

CVE fab crew: Portable toilet (3), forklift, 1 dumpster, office trailer, conex, exclusion zone conex, (2), tool trailer, crew truck. CVE Line Crew: Pickup (2), JLG (2), tool trailer Newman: trachoe (2), loader, bobcat, mini-ex, water truck, compactor, backhoe.

OSHA Recordable Safety Incidents:	Reported by:	Time:
	1 11 11 11	

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PROJECT NAME:		Third Wes	t Sub - Rebuild	DATE :	Thursday, April	19, 2012					
PO & Work Order NO. :		30000780	50 / 10035803	MAIN CONT	RACTOR : Cache	Valley Electric					
Crew Start Time:	6:	:50	Crew Stop Time	: 18:0	5 Tot Hrs m	ns: 11:15					
FCR Start Time:	6	:35	FCR Stop Time	: 18:1	5 Tot Hrs m	ns: 11:40					
Use military time format 00:0			, roncorp i		101770	11.10					
•											
WEATHER CONDITIONS:		-	Overcast/Rain, 53 degr	ees in AM - Sunr	ny, 70 degrees in PM.						
DESCRIPTION: (work per R&R set up four monitors. CV											
Electrical Crew is pulling wire a have been re-routed to the cat containment pit for transforme seven trucks in the AM and se the existing vault in the SW co HVB breakers. RMP relay and 3, Newman = 4, Emerson = 1	le trenci #1, drov ven truci rner of til I commu	h on the south re ground rods ks in the PM fo he old 46 kV y inications pers	a side of the transformer. C\ s and tied to ground grid in the or a total to date of 265 and rard. Emerson moved from sonnel are on site. CVE Lir	E Line Crew instance area south of transacre within 10' of te testing equipment	Illed the grounding grid in ansfonner #2. Newman Illeminating the south 12 king in the switchgear to test	n the oil n loaded out tV duct run into ting the 138 kV					
Dispatcher legis name and tip			- 0025		 						
Dispatcher login, name and tin		Manny Luhau									
Dispatcher logout, name and t	iiie.	Al Swinski 18	19	IMMEDIATE C	ODDECTIVE ACTION	N TAKEN.					
3/23 - Still waiting for the second (CT termin	al block from H	yundai	Confirmed with Ke	IMMEDIATE CORRECTIVE ACTION TAKEN: Confirmed with Ken Foster on 3/22 that RMP has not received						
4/9 - Identifed an issue with moun	ting of the	e ground blades	on 150A and 151A	this yet. Sent S/N to Pasco	r.						
11/30 - identified an additional ret Demo Plan					etermine dimensions.						
12/15 - Excavated to locate the 46 didn't find them. Will try again. A				Sent e-mail to Rog	ger F.						
DELAYS OR LOST TIME											
EQUIPMENT (working, de CVE fab crew: Portable toilet (3), JLG (2), tool trailer. Newman: tra	forklift, 1	dumpster, offic			ler, crew truck CVE Line (Crew: Pickup (2),					
OSHA Recordable Safety	Incider	nts:			Reported by:	Time:					
		_									

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PROJECT NAME:	Third Wes	st Sub - Rebuild	DATE : _	DATE: Friday, April 20, 2012					
PO & Work Order NO. :	30000780	050 / 10035803	MAIN CONTRACTOR : Cache Valley Electr						
Crew Start Time:	7:00	Crew Stop Time:	17:15	10:15					
FCR Start Time:	6:40	FCR Stop Time:	17:20	Tot Hrs mns:	10:40				
Use military time format 00:00		TOR GOOD TIME.	17.20		10.40				
WEATHER CONDITIONS.		Dantha Clauda EO da casa	- i- AM O	70 do DM					
WEATHER CONDITIONS:		Partly Cloudy, 50 degree	es in AM - Sunny	, 70 degrees in PM					
DESCRIPTION: (work perfix went to McClelland Sub three									
site with Chad Walter (Newmar it's slope, and elevation. At Thi wires in the YTC cabinet in the some training at the CVE office the conduits running north and vault, and swept up the area justine Crew = 7, CVE Fab Crev	rd West R&R set up control building and Newman loaded o west from vaults #9 st outside the east g	four monitors. CVE Fab Crew terminated wires in CB 144. CV out six trucks in the AM and six tand #10, completed the conduit ate in the parking lot. RMP relationship in the parking lot.	was not on site too VE Line Crew work trucks in the PM fo is for the 12 kV du ay and communica	day. CVE Electrical Crew ked on grounding after cor or a total to date of 277, ba ct bank running to the exis tions personnel are on sit	terminated npleting ckfilled over sting SW				
IF WORKING IN ENERGIZE	 		,						
Dispatcher login, name and tim									
Dispatcher logout, name and tir	me: Didn't call - v								
DISCREPANCIES:	T () 11 1 1 2 2 1 1 2 2 1 1			RRECTIVE ACTION TA					
3/23 - Still waiting for the second C		It	confirmed with Ken i this yet.	Foster on 3/22 that RMP has	not received				
4/9 - Identifed an issue with mount	ing of the ground blade	es on 150A and 151A	Received modified b	rackets from PASCOR					
11/30 - Identified an additional reta Demo Plan.									
12/15 - Excavated to locate the 46 didn't find them. Will try again. Ac	tual deoth will be much		Sent e-mail to Roger	· F.					
DELAYS OR LOST TIME E	NCOUNTERED:								
EQUIPMENT (working, del		- Andrew Control	(0) 111:-"		Distance (a)				
CVE fab crew: Portable toilet (3), t JLG (2), tool trailer. Newman: trac		ce trailer, conex , exclusion zone co it, mini-ex , water truck, compactor,		, crew truck. CVE Line Crew	: Pickup (2),				
OSHA Recordable Safety I	ncidents:		F	Reported by:	Time:				

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PROJECT NAME:	Third We	est Sub - Rebuild	DATE : Saturday, April 21, 2012							
PO & Work Order NO. :	3000078	8050 / 10035803	MAIN CONTRACTO	R: Cache Valle	y Electric					
Crew Start Time:	7:00	Crew Stop Time:	17:25	Tot Hrs mns:	10:25					
FCR Start Time:	6:50	FCR Stop Time:	17:33	Tot Hrs mns:	10:43					
Use military time format 00:00	-	-								
		• • •								
WEATHER CONDITIONS:		Sunny, 55 degre	ees in AM - 80 degrees i	PM						
DESCRIPTION: (work perfor R&R set up four monitors. CVE F	med, general	comments, instructions to	contractor, # of crew r	nembers onsite.)					
control and AC cables to transfonithe 138 kV yard and stood the coluthe 138 kV ground switches where "N" foundations and the 12 kV capnorth from vaults #9 and #10. Wil Newman = 4, R&R = 1.	umns for the 12 le it was identified pacitor circuits be	kV support stmctures between to that the control pipe provided between transfonner #2 and the s	ransformer #1 and the swite by PASCOR is 3' too short, switchgear. The also backf	chgear. They also Nevrman excavat lled the duct bank	worked on ed for the running					
	01100747101			·						
IF WORKING IN ENERGIZED				<u> </u>	· .					
Dispatcher login, name and time: Dispatcher logout, name and time	Blake Sper Blake Sper									
DISCREPANCIES:	. Ibiake Spei	10e 1735	IMMEDIATE CORRECT	TIVE ACTION TA	KEN.					
3/23 - Still waiting for the second CT to	erminal block from	n Hyundai	Confirmed with Ken Foster on 3/22 that RMP has not received this vet.							
4/9 - Identifed an issue with mounting	of the ground blace	des on 150A and 151A	Received modified brackets f	om PASCOR	÷-					
4/21 - identified a dimension issue on	the PASCOR gro	und switch control ann. (22' vs 25')	Sent e-mail to Roger F/ Mike	Shepherd						
11/30 - Identified an additional retaining	ng wall that is belo	w grade and does not show on the	Will excavate to detennine di	mensions.						
12/15 - Excavated to locate the 46 kV didn't find them. Will try again. Actua			Sent e-mail to Roger F.							
DELAYS OR LOST TIME ENG										
2										
EQUIPMENT (working, delive	ered, idle):									
CVE fab crew: Portable toilet (3), forf- JLG (2), tool trailer. Newman: tracho				ck. CVE Line Crew:	Pickup (2),					
OSHA Recordable Safety Incidents: Reported by: Time:										
23			- Troport	 						
		 								

Rocky Mountain Power

Russ Johnson

Field Construction Representative

PROJECT NAME:	Third Wes	t Sub - Rebuild	DATE : S	2012						
PO & Work Order NO. :	30000780	050 / 10035803	MAIN CONTRACTO	R : Cache Valle	ey Electric					
Crew Start Time:	6:55	Crew Stop Time:	15:30	Tot Hrs mns:	8:35					
FCR Start Time:	6:35	FCR Stop Time:	15:40	Tot Hrs mns:	9:05					
Use military time format 00:00	0.55	TON OTOP TIME.	13.40		3.00					
Ose mimary unie romat 00.00				,						
WEATHER CONDITIONS:		Sunny, 55 degre	es in AM - 85 degrees i	n PM						
DESCRIPTION: (work perfo										
switchgear and wired up the CCV piping for ground switch 150 G. 144 and worked in the switchgear 0, CVE Electrical Crew = 4, N ew	Newman was not or testing the breake	on site today. W ilding was not ers, completing the west half of	on site today. Emerson ti	med/tested CB 132	2 and CB					
IF WORKING IN ENERGIZED Dispatcher login, name and time:	Blake Spenc	e 0635								
Dispatcher logout, name and time	Blake Spenc	e 1540	IMMEDIATE CODDEC	TIVE ACTION T	AVEN.					
DISCREPANCIES: 3/23 - Still waiting for the second CT	tarminal block from b	Avundai	Confirmed with Ken Fester of							
3/23 - Still Walting for the second CT	terminal block from t	iyandar	Confirmed with Ken Foster on 3/22 that RMP has not received this yet.							
4/9 - Identifed an issue with mounting		•	Received modified brackets from PASCOR							
		•	Sent e-mail to Roger F/ Mike Shepherd							
11/30 - Identified an additional retaini Demo Plan.	ing wall that is below	grade and does not show on the	Removed wall when excavating for the 12 and 138 kV duct							
12/15 - Excavated to locate the 46 k	/ cables exiting the w	vest side of the yard. Dug 8' and	banks Found the conduits under th	e wall and transitione	d to depths					
didn't find them. Will try again. Actu	•	,	specified for 138 kV duct bar							
DELAYS OR LOST TIME EN	COUNTERED:			. – – – – – – – – – – – – – – – – – – –	·					
EQUIPMENT (working, delivent of the control of the	klift, 1 dumpster, offic			ruck. CVE Line Crew	: Pickup (2),					
OSHA Recordable Safety In	cidents:		Report	ed by:	Time:					

Rocky Mountain Power

Russ Johnson

Field Construction Representative



April 18, 2012

Laboratory Code:

RES

Subcontract Number:

NA RES 233895-1

Laboratory Report: Project # / P.O. # Project Description:

None Given

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer.

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 233895-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLÄP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 233895-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

Analysis Type:

April 17, 2012

Turnaround:

TEM, AHERA

Date Samples Analyzed:

24 Hour April 18, 2012

Client	Lab	Lab Area		b Area		Air	Number of	Analytical	Asbestos	Filter	
ID Number ID N		ımber	ber Analyzed S		Asbestos Structures Detected	Sensitivity	Concentration	Loading			
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)			
3W-041612 W	EM	877333	0.0800	1054	ND	0.0046	BAS	BAS			
3W-041612 N	EM	877334	0.0000	1054	NA	Sample Re	ejected - No Filter in C	as sette			
3W-041612 E	EM	877335	0.0800	1054	ND	0.0046	BAS	BAS			
3W-041612 S	EM	877336	0.0800	1054	ND	0.0046	BAS	BAS			

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm² = 0:010 Effective Filter Area = 385 sq mm

Due Date:_	418-12
Due Time:	235a

Seo! Logen St Ornvar, 00 30218 • Pir: 303 364-1886 • Fax 303-477-4275 • Tell Free : 880 RESI-ENV

Page 1 of 1

	Pager : 309-5			_							_							
Company: () 6 0 Company	INVOICE TO: (I	F DIFF	ERENT	<u>) </u>	Cont	act:		. 0	i	77.		ONTAC	I IN	Conta	RMATION:			
E IL ENDITON MODULE	Address:				Phor)zv		ske	way	<u> </u>			Phone				
Address: 47 W 90805 #2 Sandy, W. 84070		····			Fax									Fox:				
Janey 104. 89010					Cell	pagen	25) (54	1-16	72				Cell/p	agër:			
Project Number and/or P.O. #:	<u> </u>				Fina	I Data De												
Project Description/Location: 35 Wast Sub - RMP					1	du	ve (m	en		com							
ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm	apart in a setting of			-: ; f	REQUE	STED	AN	ALYS	is	: :	19,007	Table 1	VAL	M QL	ATRIX C	ODES		B NOTES:
PLM / PCM (TEM)RUSH (Same Day) K PRIORITY (Next Day				\top				Π	\prod	TT			Air =	A	F	Butk = B		·
(Rush PCM = 2hr, TEM = 6hr.)		J	-)	1]]]]]]]	}	C	ust =	= D	F	Painl = P	re	
		1									ł		Soil =	: S	v	Vipe = W	<u></u>	410m
Metal(s) / Dust RUSH 24 hr3-5 Day	**Prior notification is		털	Ì							ļ			: SW		==Food (┴──	ļ
RCRA 8 / Metals & Welding RUSH 5 day10 day	required for RIJSH	15 8	Quant,		[6]			Quantification	11			Dribkin	g Wa			Water = W/X	≯_ _∠	<u>/</u>
rume Scan / ICLP	turnarounds.**	<u>ဒီ</u> -	÷ 82		X						<u> </u>				Other			
Organics 24 hr 3 day 5 Day	 	Point Count	2 5 30 F J		Metals Scan			3	.S 8		E S	-ASI	MET	792 ap	pproved wipe	madia only**	┿	
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		1.1.	· ኟ _	. 1 - 1	A 8,	ORGANICS - METH Salmonella: +/-	E.coli O157;H7; Listeria: 4/-	Aerobi E.cofi	Coliforms:	8	8 2 E	8 8	ě	ag	Date	Time		Use Only)
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NOTE: REI will analyze incoming samples basab operation received and will not be re analysis as indicated on this Chain of Custody shall constitute an analysical services agreeme													e agre	es that	t submission o	f the following sa	mples for re	betreupe
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
Т	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

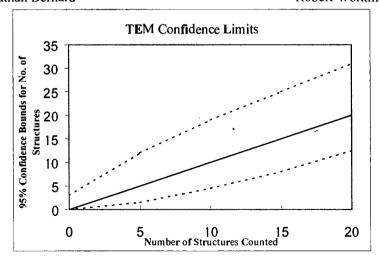
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Aspestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N(S)
Voltage (KV)	100 KV
Magnification	E OKX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary lilter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RaR
Sample Type (A=Air, D=Diist):	A
Air volume (L) or dust area (cm2)	1054
Date received by lab	4/17/12
Lab Job Number:	233895
Lab Sample Number:	877333

Analyzed by	Aн
Analysis date	4/18/12
Method (D=Direct, I=Indirect IA=Indirect, ashed)	0
Counting rutes (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resuspension Volume (ml)					
Volume Applied to secondary filter (ml)					

Grid	Grid Opening Structure		No. of Str	uctures	Dime	nsions	Identification	Mineral Class	·			1 = y	es, blank	= no
Ond	Ond Opening	Туре	Primary	Total	Length	Width	icentinodion	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
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	H4-3	4												
	64-3	MD												
	F43	M			Ø									

Reservoirs Environmental, Inc. TEM Astrestos Structure Count

1	
Laboratory name:	REI
Instrument	JEOL 100 CX NS
Voltage (KV)	100 KV
Magnification	∕2 016X 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RaR
Samole Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1054
Date received by lab	4/17/12
Lab Job Number:	233895
Lab Sample Number:	877334

F-Factor Calculation (Indirect Preps Only): Frection of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	Ан
Analysis date	4/18/12
Method (D=Direct, I=Indirect, 1A=Indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Stm	ctures	Dimensions		Dimensions Identification Minera					1 = ye	s, blank	= no
Gild	Grid Operang	Туре	Primary	Total	Length	Width	Idendication	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
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Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instmment	JEOL 100 CX N (S)
Voltage (KV)	100 KV
Magnification	€0KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

RaR
A
1054
4/17/12
233895
877335

Analyzed by	Ан
Analysis date	4/18/12
Method (D=Dlrect, I=Indirect, IA=Indirect, ashed)	0
Counting mles (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):								
Frection of primary filter used								
Total Resuspension Volume (ml)								
Volume Applied to secondary filter (ml)								

Grid	Grid Opening	Stmcture	No. of Structures		Dimensions		mctures Dimensions		Identification	Mineral Class				1 = y	es, blank	= no
Original	Grid Opening	Туре	Primary	Total	Length	Width	Remained and the	Amphiboie	С	NAM	Sketch/Comments	Sketch	Photo	EDS		
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Reservoirs Environmental, 1nc. TEM Asbestos Structure Count

Laboratory name:	REI
instmment	JEOL 100 CX NS
Voltage (KV)	100 KV
Magnification	€0KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RaR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	1054
Date received by lab	4/17/12
Lab Job Number:	233895
Lab Sample Number:	877336

Analyzed by	Ан
Analysis date	4/18/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	0
Countrig mles (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Volume (ml)							
Volume Applied to secondary litter (mt)							

Grid	Grid Opening	Stmcture	ncture No. of Structure		Dime	nsions	Identification	Mineral Class				1 = ye	es, blank	= no
Gild	Grid Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H54	ΔV												
	654	MD								_	·	· ·		
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Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



April 19, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 233984-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer.

Reservoirs Environmental, Inc. Is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 233984-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 233984-1

Client:

Client Project Number / P.O.:

R & R Environmental

Client Project Description: Date Samples Received:

None Given

3rd West Sub - RMP April 18, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

April 18, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID Nu	umber	Analyzed	Analyzed Volume Sampled		Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-041712 W	EM	877528	0.0900	930	ND	0.0046	BAS	BAS
3W-041712 N	EM	877529	0.0900	932	ND	0.0046	BAS	BAS
3W-041712 E	EM	877530	0.0900	932	1	0.0046	0.0046	11.1
3W-041712 S	EM	877531	0.0900	930	ND	0.0046	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity
Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 233984-1

Client:

R & R Environmental

Client Project Number / P.Q.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

April 18, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

April 18, 2012

Client ID Number	Asbestos Mineral					Structures >5 Microns	**Excluded Structures	Asbestos Structures			
					bestos Str	ucture Typ	es*	in Length		for	
			_	Fibers	Bundles	Clusters	Matrices	_		Concentration	
3W-041712 W	EM	877528	ND	0	0	0	-	0	0	0	
3W-041712 N	EM	877529	ND	0	0	0	. (0	0	0	
3W-041712 E	EM	877530	Chrysotile	1	0	0	(0	0	1	
3W-041712 S	EM	877531	ND	0	0	0	() 0	0	0	

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due Date	1912
Due Time:	215

RESTAB RESERVOITS ENVIRONMENTAL, INC... 9801 Logan St. Oenwer, CO 80216 · Ph: 303 984-1986 · Fex 303-477-4275 · Toll Fews :868 RESI-ENV

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Page _	1	of _	

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Sandy Ul. 84070						Fa											Ľ	ex:			. `	
								61. 8				-W	BE	5			_ °	eW/pay	ger			
Project Number and/or P.O. #:						Pi		Sia Deli	•			_										
Project Description/Location: 30 West Suib - RAVP							<u></u>	<u>kive</u>	<u></u>	5 V	161	Wix	<u>ی. د</u>	2 7				_				
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Organics 24 hr S day S Day	turnarounds.**	Point Count	* g	•		Metals Scan	İ	\mathbf{H}		Quantification		1	1		**A	STM	E179			media only**		
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		ž	rem - AHE Semi-quant,	E	DUST	METALS RCRA 8,	8	8					% } ≻ :	MPLE	Sample Volume	(L) / Areo	Matrix	Containers	Collected	Collected		Use Only)
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Number of samples received: (Addition NOTE; REI will analyzs incoming samples based upon information received and will not be re analysis as indicated on this Chain of Custody shall constitute an analytical services agreement.	nal samples shall be listed on esponsible for errors or omissions in ca and with payment terms of NET 30 days	dculat	ions res	ulting 1	from t	the inacc	omecy	of orig	ginal d	data I	By sign	ning cl	iant/co	ompany re	epresenta	stive a	grees	that s	ubmission o	f the following sa	mples for re	quested
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7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

Sizing Conversion

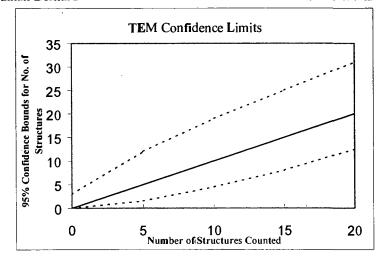
1 length unit = 5 mm on screen = 0.278 micron 1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Resorvoirs Environmental, Inc. TEM Asbestos Strueture Count

Laboratory name:	REI
fnstrument	JEOL 100 CX N(S)
	100 KV
Voltage (KV)	
Magnification	ZOKX) iOKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	_

Client :	RHR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	950
Date received by lab	4/18/12
Lab Job Number:	233984
Lab Sample Number:	877528

Analyzed by	M
Analysis date	4/18/12
Method (D=Direct, I=Indirect, IA=IndIrect, ashed)	
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Oate Analyzed

F-Factor Calculation (Indirect Preps	Only):	
Fraction of primary filter used	}	
Total Resuspension Volume (ml)	:	
Volume Applied to secondary filler (ml)		

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	eş, blank	= no
J.10	J Opening	Туре	Primary	Total	Length	Width	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	Hul-le	M												
	G4-6	M								,				
	P46	M			Pre	AA.	90/sind	act ~52	de	bis				
	246	W.			0	ver B	NA	Sulle	4/1	8/12				
	cure	M)		0 0						,-
B	K5-4	M							•			·		
	154	3				- "					•			
	95-4	M					_							
	\$5M	M												

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	RÉI
Instrument	JEOL 100 CX N(S)
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	RHZ
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	932
Date received by lab	4/18/12
Lab Job Number:	2 3398 4
Lab Sample Number:	877529

Analyzed by	-pe
Analysis date	4/18/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTIVI)	AH
Grid storage location	Month Analyzed
Scope Alignment	Oate Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primery filter used					
Total Resuspension Volume (ml)					
Volume Applied to secondary filter (ml)					

Grid	Grid Opening	Structure	No. of Str	No. of Structures		Dimensions		Mineral Class			1 = yes, blank = no			
		Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
A	456	W						-						
	P56	W							·					
	25-6	M			lre	rt s	et into	ct 57, a	lubri	1	fall y		,	
	C56	M.			Pn	er B	802 ms	ict 52. d	lebn	<u> </u>	forth 4	118/1	د	
	B56	M						•						
B	96-1	M		_						.=.,				
	F6-1	Ń												
	E10-1	M				,		-						
	C6-	M												
,														

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N (S)
Voltage (KV)	100 KV
Magnification	ZOKX iOKX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

TEM MODESTOS CUA	
Client :	RHR
Sample Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	932
Date received by lab	4/18/12
Lab Job Number:	233984
Lab Sample Number:	877530

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (ml)						
Volume Applied to secondary filter (ml)						

Analyzed by	al
Analysis date	4/18/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D_
Counting mies (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	e No. of Structure		octures Dimensions		Identification	Mineral Class			1 = yes, blank = no			
Ond	Ond Opening	Туре	Primary	Total	Length	Width	identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
A	G5-4	ND								·				
	754	8			D.	rer i	4 90%	was Sl	deb	ż	·		-	
	95-4	M			Pr	er B	n Est	whach 5) de	6 m.	fuff -	4/18	112	
	C5~1	M)									000	7 -7		
	BSM	8												
B	K5-1	M												
	151	(M)												
	451	M												
	FYE	F		(3,5	l	co		\					

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REi
Instrument	JEOL 100 CX NG
Voltage (KV)	100 KV
Magnification	20KX)10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	RHZ
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	930
Date received by lab	4/18/12
Lab Job Number:	233984
Lab Sample Number:	877531

Analyzed by	ell
Analysis date	4/18/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	F-Factor Calculation (Indirect Preps Only):						
Fractism of primary litter used							
Total Resuspension Volume (mi)							
Volume Applied to secondary filter (ml)							

Grid	Grid Opening	Stracture			Dimensions		Identification	Mineral Class				1 = yes, blank = no		
Ond		Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	FU-1	M												
	SUI	M												
	C4-1	M				Pner	A Sc	Inlack	37	de	biro of	fle	4/10	/12_
	16-1	M				Pre	y By	- Sw	1/2. c	1/18/	b ·		' /	
	26-1	3								1 - 7				
B	K5-3	(3)												
حرب	145-3	3							·					
	(15-3	N												
	F5-3	NÓ												
							·							

Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Anaiyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, $s/mm^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2)}$

GO = TEM grid opening



April 20, 2012

Laboratory Code:

RES

Subcontract Number:

NA RES 234064-1

Laboratory Report: Project # / P.O. #

None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer.

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 234064-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101898-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 234064-1

Client:

R & R Environmental

Client Project Number / P.O.: €

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

April 19, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

April 20, 2012

Client ID Number	Lab ID Number		Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-041812 W	EM	877764	0.0900	913	ND	0.0047	BAS	BAS
3W-041812 N ↔	EM	877765	0.0900	913	ND	0.0047	BAS	BAS
3W-041812 E	EM	877766	0.0900	913	ND	0.0047	BAS	BAS
3W-041812 S	EM	877767	0.0900	916	ND	0.0047	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm² = 0.010

Effective Filter Area = 385 sq mm

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101890-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 234064-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Oate Samples Received:

3rd West Sub - RMP

April 19, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

April 20, 2012

Client ID Number	Lab ≀D Ni	umber	Asbestos Mineral	Asl	pestos Str	ucture Typ	pes*	Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for
			•	Fibers	Bundles	Clusters	Matrices			Concentration
3W-041812 W	EM	877764	ND	0	0	0	0	0	0	0
3W-041812 N	EM	877765	ND	0	0	0	0	0	0	0
3W-041812 E	EM	877766	ND	0	0	0	0	0	0	0
3W-041812 S	EM	877767	ND	0	. 0	. 0	0	0	0	0

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to incorrect aspect ratio

ND = None Detected

Due Date:	d2012
Due Time:	345a

RELAB RESERVOITS ENVIRONMENTAL, INC.

Page 1 of (INVOICE TO: (IF DIFFERENT) **CONTACT INFORMATION:** Company: Address: W 9000S #2 Phono: ax. W. 84070 Cell/pagor Project Number and/or P.O. #: Project Description/Location: 3th West Sub- RMP REQUESTED ANALYSIS VALID MATRIX CODES LAB NOTES: ASBESTOS_LABORATORY HOURS: Weekdays: 7am - 7pm PLM / PCM/ TEM RUSH (Same Day) PRIORITY (Next Day) STANDARD Bulk ≈ B $\Delta I_f = \Delta$ (Rusti PCM = 2hr, TEM = 6hr.) Dust = D Paint = P CHEMISTRY LABORATORY HOURS: Weekdays: 8am - Spm Soil = S Wipe = W Metaks) / Dust ____RUSH ____ 24 hr. ___3-5 Day Swab = SW F = Food Quant **Prior notification is RCRA 8 / Metals S Walding Drinking Water = DW | Waste Water = WW required for RUSH Point Count RUSH ___ 5 day ___ 10 day Fumo Scan / TCLP O = Other turnarounds.** ŧş Organics 24 hr. ___ 3 day ___S Day **ASTM E1782 approved wipe media only** MICROBIOLOGY LABORATORY HOURS: Weekdays: 9ani - 6pm ___ 24 hr. ___2 Day E.coli O1S7:H7, Coliforms, S.aureus Salmonella, Listeria, E.coll, APC, Y & M 48 Hr. 3-5 Day Mold RUSH_ 24 Hr 46 Hr 3 Day "Turnsreund times establish a laboratory priority, aubject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.** Special Instructions: EM Number (Laborator) Samole Date Time Use Only) Collected Collected Client sample ID number (Sample ID's must be unique) MICROBIOLOGY hh/mm s/n 3W041812W 913 4/18/12 3W-04L917_N 913 913 3W-0U1812. I Number of samples received: (Additional samples shall be listed on attached long form.) NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or ornisations in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical senices agreement with payment terms of NET 30 days, failure to comply with payment temps may result in e 1.5% monthly interest surcharge. Date/Time: 4118/12 Relinguished By: Sample Condition: On Ice Sealed Intact Laboratory Use Only Temp. (F°) Yes / No Yes / No Yes No Carrier: Received By: Date/Time: Results: Contact Email Fax Date Time Initials Contact Phone Ernall Fax Date Time Initials Contact Phone Email Fax Date Time Initials Contact Date Time Initials

(below # 793 # 6567 6572 7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite T = Tremolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron

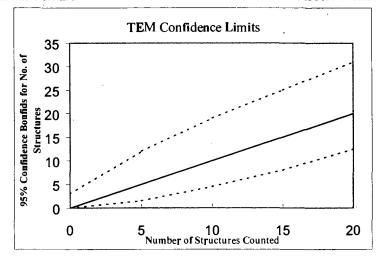
1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX NS
Voltage (KV)	100 KV
Magnification	20K 10KX
Grid opening area (ınm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	RTR
Sample Type (A=Alr, D=Dust):	A
Air yolume (L) or dust area (cm2)	913
Date received by lab	4/19/12
Lab Job Number:	234064
Lab Sample Number:	877764
•	. ,

Analyzed by	JB
Analysis date	4/20/12
Mettrod (D=Direct, l=Indirect, IA=Indirect, ashed)	"D'
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Onty):
Fraction of primary filter used	
Total Resuspension Volume (mt)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = yes, blank = no		
Ond	Grid Opening	Туре	Primary	Total	Length	Width	identinoadon	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	13-1	ND										ļ		
	153-1	ND												
	H3-1	ND			6	mp	A+13	~ 70	6:1	hud	5hode	ba's		
	613-1	ND				*1	10							
	K4-4	ND					AB	4/20/12						
3	K3-1	MD					//	7 /		,				
	H3-1	M				-								
	G13-1	MD												
	E3-4	MD												

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) 6
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D ≃	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	·
QA Type	

Client:	RTR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	913
Date received by lab	4/19/12
Lab Job Number:	234064
Lab Sample Number:	877765

Anatyzed by	JB
Analysis date	4/20/12
Method (DeDirect, I=Indirect, IA=Indirect, ashed)	'D'
Counting rules (ISO, AHERA, ASTM)	AHERA
Orid storage location	Month Analyzed
Scope Afignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Frection of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Operting	Structure	No. of Structures		Dimensions		Identification	Mineral Class			1 = yes, blank = no			
Gild	Grid Operang	Туре	Primary	Total	Length	Width	Idditascston	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
4	62-3	ND												
	FZ-3	ND												
	E2-3	ND			Pa	05/	, +3	~80%	when	+	5% rebri	5		
	CZ-3	ND									•			
	133-1	ND						B	4/20	12				
3	H3-4	ND				,		91	11 7					
	634	ND												
	F3-4	ND												
	E3-4	ND												

Reservoire Environmentai, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Maanification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

	· ESCOPOS CESSEES COSTIL							
Client :	RTR							
Sample Type (A≃Air, D=Dust):	A							
Air volume (L) or dust area (cm2)	913							
Date received by lab	4/19/12							
Lab Job Number:	234064							
Lab Sample Number:	877766							

F-Factor Calculation (Indirect Preps On	ly):
Fraction of primary fitter used	 -
Total Resuspension Volume (ml)	
Volume Applied to secondary filtsr (ml)	

Analyzed by	JB
Analysis date	4/20/2
Method (D=Obect, I=Indirect, IA=Indirect, ashed)	"D"
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structu re Type	No. of Structures		Dimensions		Identification	Mineral Class		,	1 = yes, blank = no			
			Primary	Total	Length	Width	1	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H2-1	ND_												
	G2-1	ND		`										
	F2-1	ND			Pa	p A	+B	~ 70 %	inh	nf	5-7%	akk	n's	
	E2-1	20				•								
	F3-4	ND						//	B 41	20/17				
B	H3-1	ND						/ (7	1			,	
	G31	ND												
	F3-4	ND									·			
	E3-4	20						-			·			

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C ≈ Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet doc

Reservoirs Envtronmental, inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX NS
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	RTR
Sample Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	916
Date received by lab	4/19/12
Lab Job Number:	234064
Lab Sample Number:	877767

Analyzed by	TB
Analysis date	4/20/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Praps	Only):
Fraction of primary filter used	1
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	,

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
Cito	Cerio Operang	Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments_	Sketch	Photo	EDS
A	F2-3	ND				4								
	E2-3	ND		<u>-</u>	5	p A	60	Zontus	f	5%	debris			
	G3-1	ND			Pa	203	60	honton	$f \leq$	Topo	obbins			
	F3-1	MD												
	F3-3	ND						1B 4	20/12					
B	F3-1	ND					! 	// /						
	E3-1	ND												
	C3-1	ND										,		
/	B3-1	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confinnation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

is a structure with fibers in random arrangements such that all fibers are Cluster:

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

1 x Eff. Filter Area (mm²) x IL Concentration, $s/cc = \frac{\# Asbestos Structures}{x}$ Volume (L) Average GO area (mm²) 1000cc # GO Counted

> Filter loading, $s/mm^2 = \frac{\# Asbestos structures}{mm^2}$ Area Analyzed (mm²)

> > GO = TEM grid opening



April 23, 2012

Laboratory Code:

RES NA

Subcontract Number: Laboratory Report:

RES 234160-1

Project # / P.O. #
Project Description:

None Given 3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed In general accordance with the appropriate methodology as stated In the attached analysis table. The results have been submitted to your office.

RES 234160-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely.

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 234160-1

Client:

Client

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

April 20, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour April 20, 2012

Date Samples	Analyzed:
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•	•	•			
Lab	Area	、 Air	Number of	Analytical	Asbestos
ID Number	Analyzed	Volume	Asbestos	Sensitivity	Concentration

ID Number	ID No	ımber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-041912 W	EM	87796 3	0.0800	968	ND	0.0050	BAS	BAS
3W-041912 N	EM	877964	0.0800	968	ND	0.0050	BAS	BAS
3W-041912 E	EM	877965	0.0800	968	ND	0.0050	BAS	BAS
3W-041912 S	EM	877966	0.0800	966	ND	0.0050	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

Filter

DATA QA

Due Date:	4.21-12
Due Time:	

REILAB Reservoirs Environmental, Inc.

Common Lift No. 1 (ACC ENAVIGNOS ACC ACC ACC ACC ACC ACC ACC ACC ACC AC	,	Pager: 203-59 INVOICE TO: (IF			NT)									co	NTAC	T IN	FOF	MAT	ION:				········
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Salmonella, Listeria, E.coil, APC, Y & M		<u> </u>		S. Pa						8	<u>اچ</u> ا	g g.							- 1				
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April 24, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 234312-1 None **G**iven

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 234312-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

· NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 234312-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP April 23, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

April 23, 2012

Client ID Number	Lab ID No	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-042012 W	EM	878210	0.0900	916	ND	0.0047	BAS	BAS
3W-042012 N	EM	878 211	0.0900	916	ND	0.0047	BAS	BAS
3W-042012 E	EM	878212	0.0900	884	ND	0.0048	BAS	BAS
3W-042012 S	EM	878 213	NA	3 .6	NA	Rejec	ted Due To Failed Pu	mp
NA = Not Analyzed ND = None Detected BAS = Below Analytic Average Grid Opening	0.010	Filter Diame	al = Mixed C e ter = 25 mm er Area = 385		-	Control years of the control of the		

Due Date: 역 2억·12 Due Time: 10=

Reservoirs Environmental, Inc.

	Pager : 283-506																						<u> </u>
Company: 4 4 0 6	INVOICE TO: (IF	DIFF	ERE	NT)		Cont	n mir							CC	NTAC	T IN			ION:				
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E.coll O1S7:H7, Coliforms, S.aureus 24 hr 2 Day	3-5 Day	report,		4					b	, S	Quantification	Quantification	Reatton . Qu]							-		
Salmonella, Listeria, E.coll, APC, Y & M 48 Hr. 3-5 Day			7402, SO-Ind	OSHA	ايوا	Fume,			7	Quantification				2		}					ļ		
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NOTE: REI will analyze incoming eamples based upon information received and will not be r analysis as indicated on this Chain of Custody siteliconetiute an analytical services agreem	responsible for errors or omissions in ca ent with payment terms of NET 30 days	alculeti s faiks	kms resi re lo cor	ulting fi	from the	inaccu	racy of	origina v resul	i data	. Ву si 1.5% п	gning	dient	Voomp	eny rep urcharo	presentati Ie	/e agr	ees th	at subm	i ssion of	the following s	amples for n	equested	
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

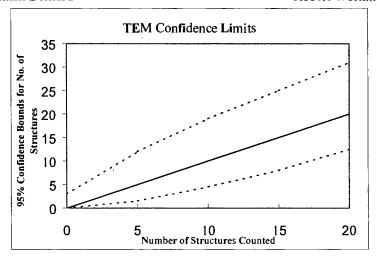
Sizing Conversion 1 length unit = 5 mm on screen = 0.278 micron

1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	€0KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2) Secondary Filter Area (mm2)	385
QA Type	

Client :	RHR
Sample Tyoe (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	716
Oate received by lab	4/23/12
Lab Job Number:	234312
Lab Sample Number:	878210

Analyzed by	M
/Analysis date	4/23/12
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction ot primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = y	s, blank	= no
·	Ond Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
LA	F2-3	M												
	226	M		l										
	23-3	M				Pres	A -9	Dilack	5-10	Zdo	523			
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	P6-1	M				·			1	17	/			
5	HM3	M							ļ					
	641	M)								i				
	84-4	W												
	B4-4	8												
											·			

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	RE1
Instrument	JEOL 100 CX N √S
Voltage (KV)	100 KV
Magnification	€0KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D ==	0.056 um
Primary filler area (mm2)	365
Secondary Filter Area (mm2)	
QА Туре	·

Client :	RIR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	916
Oate received by lab	4/23/12
Lab Job Number:	234312
Lab Sample Number:	87821

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resumpension Volume (ml)					
Volume Applied to secondary filter (mi)					

Analyzed by	Me
Analysis date	4/23/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	9
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage tocation	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = ye	s, blank	= no
Grid	Grid Operating	Туре	Primary	Total	Length	Width	identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	ff4-y	M												
	636	M			Pr	ex A	607 10	rach 5	10%	Les.	ليح			
	64-1	M			PV	erb	n A	In Mr	4/2	3/12				
	t2-b	W												
	F2-4	M												· · · · · · · · · · · · · · · · · · ·
6	K4-4	M										<u>. </u>		
	my	M						·						
	43-1	W												
	63-4	M		·										
											·			

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysolile

NAM = Non-asbestos material

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N
Voltage (KV)	100 KV
Magnification	€0KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.050 um
Primary filler area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RIR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	284
Dale received by lab	4/23/12
Lab Job Number:	234312
Lab Sample Number:	878212

Analyzed by	Me
Analysis date	4/23/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	•
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (mi)	

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class	Mineral Class				1 = yes, blank = r		
0.10	One opening	Туре	Primary	Total	Length	Width	identification	Amphibole	Amphibole C		Sketch/Comments	Sketch	Photo	EDS	
A	H5-6	M			· 										
	CASTO	M				Prex	A Jol	ntact 5.	10%	leb 2	2				
	14-3	M				Pres	BAA	Luste	, y	/23/	liz				
	Hy-2	W						· Corpo	1	(· · /					
	G4-3	M					·								
6	65-4	M													
	1534	M									,				
	854	M													
	66-4	M													
	KBY	2													

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Eauations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{\text{IL}}{\text{1000cc}}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



April 24, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 234314-1 None Given

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 234314-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 234314-1

Client:

R & R Environmental

Client Project Number / P.O.: Client Project Description:

None Given

Date Samples Received:

3rd West Sub - RMP

Analysis Type:

April 23, 2012

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

April 24, 2012

Client ID Number	Lab ID Nu	mber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	` Filter Loading
			(mm²)	(L)	- 0.00.00	(s/cc)	(s/cc)	(s/mm²)
3W-042112 W	EM	878 214	0.1000	720	ND	0.0053	BAS	BAS
3W-042112 N	EM	878 21 5	0.1000	7 2 0	ND	0.0053	BAS	BAS
3W-042112 E	EM	878 21 6	0.1000	720	NO	0.0053	BAS	BAS
3W-042112 S	EM	878 21 7	0.1000	720	ND	0.0053	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

Due Date: <u>낙·고</u>니고 Due Time: Lo-

Reitas Reservoirs Environmental, Inc.

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Project Number a	and/or P.O. #:									Fine	ager: Data De	SOL	le Emai	Addie	<u> </u>		·		<u></u>	- градог					_
Project Description	-	West Sub- & RMP									deme														
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_	atals & Welding	RUSH 5 day		**Prior notifical required for F		ᇦ	Ouarr,			E			툁			5		Drinking	Water	= DW	Waste	Water = WW			
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		ATORY HOURS: Weekdays:	9am - 6pm			<u>ٿ</u> ا		1 1				1	5	tification	ğ g	on Gu	Į								
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	<u> , was a la la la sana a</u>	apply for afterhours, weakends and	holidays."	<u> Partidital</u>		\f	AHERA. Lant, Mic	7400A.	Total	- Analyte(s) TCLP, Weld	ORGANICS - METH Salmonella: +/-	E.coli O157:H7:	[윤]	نع الإ	.; ÷	÷ 2	ł	Sample Volume (L) / Area	8	5					
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
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C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

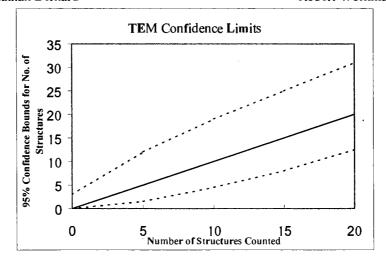
Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron

18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	365
Secondary Filter Area (mn12)	
QA Type	

Client :	Rat
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	720
Dale received by lab	4/23/12
Lab Job Number:	234314
Lab Sample Number:	878214

Analyzed by	JB
Analysis date	4/24/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to Secondary filter (ml)	

Grid	Grid Opening	Structura	No. of Str	uctures	Dimer	nsion <u>s</u>	identification	Mineral Class				1 = y	es, blank	= no
Grid	Grid Operang	Туре	Primary	Total	Length	Width	- Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
·A	K3-1	ND												
	H3-4	N			Pag	ΔA	~60	Lointan	4	5%	debris			
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B	G2-6	NO						/ "	7					
	42-3	W)												
	F2-6	ND												
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	E3-1	M												

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area	300
(mm2) QA Type	

Client :	Rat
Sample Type (A=Air, D=Dust):	A
Atr volume (L) or dust area (cm2)	720
Date received by lab	4/23/12
Lab Job Number	234314
Lab Sample Number:	878215

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (ml)						
Volume Applied to secondary filter (ml)						

Analyzed by	JB
Analysis date	4/24/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	ת ח ה
Counting mles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uclures	Dimer	nsions	Identification	Mineral Class				1 = yes, blank = no		= no
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	63-1	MD				l	·		,					
	F3-4	ND		,	Par	o A	60	The who	nf.	5-	7% debu	5		<u>.</u>
	F3-1	ND			Pr	o B	80	The che	F	5-3	% debr	د ا		
	E3-4	ND		,	 				6					
B	K3-4	M						1	10	4/2	4/12			
	H3-4	ND								/	y			
	6134	ND												
	F34	M												
	E3-4	M												

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mɪn2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filtar Area (mm2)	
QA Type	

Client :	Rat				
Sample Type (A=Air, D=Dust):	A				
Air volume (L) or dust area (cm2)	720				
Date received by lab	4/23/12				
Lab Job Number:	234314				
Lab Sample Number:	878216				

Analyzed by	JB
Analysis date	4/24/12
Method (D=Dlrect, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Gild storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Praps	Only):						
Fraction of primary filter used							
Total Resuspension Volume (ml)							
Volume Applied to secondary filter (ml)							

Grid	Grid Opening	Structure	No. of Stru	uctures	Dimer	Dimensions Identific		Mineral Class				1 = yes, blank = no		
0110	Cha Opening	Туре	Primary	Total	Lengih	Width	isont location	Amphibole	С	NAM Sketch/Com	Sketch/Comments	Sketch	Photo	EDS
A	14-4	ND									·			L
	K44	ND										. ,		
	H4-4	ND			Pmp	Aan	B ~6	Ofsint	nf	40	-25%	shor),2 	
	64-4	ND			'									
	F4-1	ND						B	4/24	1/12	,	<u></u>		
B	F4-4	ND						1	7	1.				
	E4-4	ND						,						
<u> </u>	24-4	ND												
	E4-6	NP			·									
	C4-10	ND												

Reservoirs Environmental, Inc. TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	·
QA Type	

Client :	Rat
Sample Type (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	720
Date received by lab	4/23/12
Lab Job Number	234314
Lab Sample Number:	878217

Lab Sample Number:	878217
F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Values Applied to accorder (No. (-1)	

Analyzed by	JB
Analysis date	4/24/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting mles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture Type	No. of Structures		Dimensions		Identification	Mineral Class			1 = yes, blank = no			
			Primary	Total	Length	Width	*uendication	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F4-1	ND												·
	E4-4	NP			Pn	MA	~5	% infor	<i>f</i>	10-	5% debui	.		
	E4-1	NO			Pm	0 1	70	2. notent	 	10-1	"malebris	>		
	C4-4	ND						45	4/24/	12				
	C4-1	NO							7 7		٠.			
B	H3-4	M		·				·		·				
	63-4	ND												
	F34	\mathbf{M}												
	E3-4	20												
	C3-4	ND		•										

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\text{\# Asbestos Suructures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mni² = <u># Asbestos structures</u> Area Analyzed (mm²)

GO = TEM grid opening